

23 August 1973

APPLICATIONS DIVISION/OJCS
GENERAL DIVISION POLICY AND GUIDANCE

I. General

The Division is organized primarily to provide support to Agency components in utilizing computers as a supporting tool in meeting their missions. As such the Division is responsible for three basic functions:

- A. Feasibility studies of improving Agency functions through automation.
- B. Preparation of new computer application programs.
- C. Maintenance and production control of completed application programs.

In meeting these responsibilities the D/OJCS has given general guidance as follows:

- A. The Division will handle feasibility studies and development of Agency applications as requested by Agency components.
- B. The Division will have branches which contain the skill pools of people.
- C. Projects, such as development activities or feasibility studies, will be handled by project teams of the necessary skills under a Project Leader. ✓

- D. A Project Management Group (PMG) will monitor and control the project teams, will allocate resources, and conduct technical reviews for the projects.
- E. The primary control of a project will be cost and schedule, but the technical reviews by the PMG will also review end product efficiency and quality.
- F. The basic document on a project will be a contract which will be drawn up by the Project Leader and the PMG and which will specify human and machine resource development costs and schedules.
- G. The Project Leader is delegated management and technical responsibility for his project, i. e., his management objectives are to meet costs and schedules. At technical review checkpoints, his performance is reviewed by the PMG for attainment of objectives and for quality.
- H. Projects will have a beginning and end date.
- I. A Production Staff which will draw upon the skill bank as required will manage production processing and maintenance of completed projects.
- J. Upon completion (end date) projects will be reviewed for completeness, i. e., documentation, maintainability, processing efficiency and optimization, production human factors, and portability by both the PMG and the Production Staff. The project must meet Production Standards before the Production Staff accepts the project for production.
- K. The documentation for each completed project will include a future continuance review date. At such time the Assistant for Production and PMG will review the project as to its meeting current objectives and as to current cost effectiveness. A decision as to total project restudy or to continuance with a new review date will be made.

- L. The Branch Chiefs will manage the skill banks and be responsible for the development of the necessary skills through training and recruitment.
- M. The Branch Chiefs will monitor skill utilization and career planning and career development of the personnel.
- N. The Division will manage the Data Access Centers (DAC) until such time that these centers are declared in production and transferred to operational components.

II. Channels for Work Requests

Work Requests will be received by any member of the division.

- A. Work Requests against applications (completed projects) will be forwarded to the Assistant for Production (Production Staff). If the request requires an estimated resource utilization of greater than \$2,000, he transfers the request to the PMG. If the request requires an estimated resource utilization of less than \$2,000, he judges the merits of the request and either honors it or rejects it with a copy of the rejection to the PMG. If a change is made to production software or to the structure of a production data base as a result of the request, a description of the change and the revised documentation is given to the PMG (feedback purposes).
- B. Work Requests for development work or for large (GT \$2,000) changes to production work will be forwarded to the PMG. The AD person who forwards the request should provide as best he can such information as his evaluation of the complexity and priority, skills required, resource quantification, and his recommendations as to personnel for the effort.

III. Work Authorization Levels

A. Assistant for Production

Work Requests against applications with estimated resource utilization of less than \$2,000. Copies of rejections will be sent to the PMG.

B. Members of the PMG

Estimated resource utilization of less than \$8,000. Copies of rejections will be sent to the C/PMG.

C. C/PMG

Estimated resource utilization of less than \$30,000. Copies of rejections will be sent to the C/AD.

D. C/AD

Estimated resource utilization of less than \$50,000. The division Management Review Board will be the mechanism for such review. Rejections will be sent to the D/OJCS for concurrence.

E. D/OJCS

On projects on which the estimated resource utilization is greater than \$50,000, the Management Review Board will forward the proposal to the D/OJCS with several options for differing levels of cost and with appropriate recommendations.

IV. Program Management Group (PMG)

The PMG is composed of 5-7 permanent members. The Deputy Chief for Project Management is Chief of the PMG. Other members of the division will be temporarily assigned to the PMG for specified periods as required.

Work Request Flow

C/PMG receives the work requests. C/PMG either rejects or assigns the request to a PMG member for follow-up action. The assigned PMG member collects additional information on requirements (if necessary), adds a preliminary evaluation of essential skills, cost estimates, and projected schedules. If the estimated cost is less than \$8,000, the PMG member decides the further action. If the estimated cost is greater than \$8,000, he forwards the request with a proposal and recommendations to the PMG for further action. If request (regardless of size) is approved for project status, it is formalized as a project with project name and accounting controls. The PMG with the concurrence of branch chiefs selects the project leader. In the case of non-agreement on project leader selection between PMG and the branch chiefs, the DC/Project Management (C/PMG) rules.

V. Project Leader Tasks

As a first step, the project leader performs a feasibility study on the project. The study with recommendations for further action is presented to the PMG. Recommendations for development will include estimated costs, projected schedules, required skills, and recommendations as to personnel assignments.

If the PMG authorizes the project, based upon the feasibility study, a contract is written between the PMG and project leader detailing the understanding as to costs, schedules, and personnel. Selection of team personnel is coordinated by the branch chiefs and the project leader with the project leader being given strong consideration as to his choice of selection.

Project leaders are authorized to consult with division staff members, branch chiefs, and the technical consultants in User Support Division, as required.

VI. Project Steps and Checkpoints

At present, OJCS has no across-the-board standard defined steps in project development. Software systems in OJCS for software development are diverse, -- both CP/CMS and OS with the PL-1, FORTRAN, and COBOL languages, ARGOS, GIM, as examples. Textbook standards are not appropriate for such a mix of tools; however, OJCS will have a written development guide. The PMG is commissioned to develop this OJCS standard development guide. Until new and more comprehensive standards are developed, the following guide will be used.

Software Design Steps

1. Preliminary Evaluation - PMG member.
2. Feasibility Study - Project Leader.
Demand for system authorization, capabilities, functions, constraints on how of functions, time requirements, cost-manpower and machine, estimated production costs after implementation, recommended schedule, alternatives with recommendations.
3. System Design - Project Team.
General system flow, I/O formats, main programs and functional narratives, interprogram communication.
4. Programs - Project Team.
Detailed system flow, program functional narratives, program flow writes (or flow charts), program spec sheets, data formats, report formats, I/O specs.
5. Modules (subroutines) - Project Team.
Flow writes, module spec sheets, personnel assignments (two per module - primary and backup), schedule.
6. Coding - Project Team.
Test data generation, module coding, module breakdown with loop to step four if too large.

7. Debug - Project Team.

Certification of modules, test of system hierarchy, system test (last), documentation conformity review.

8. Test Operational - Project Team.

User feedback, minor changes (documentation is kept current), system certified.

9. Preliminary Operational (parallel operation on conversion) - Project Leader, Production Staff, and PMG.

Logging of user feedback, evaluation of overall efficiency, evaluation of module efficiency (modules must be ordered as to system significance), evaluation of feedback (only very critical or very minor changes made to system), decision made either to turn system over to routine production or to return to step two for total system overhaul, documentation verification.

Checkpoints (for technical review by PMG)

The following checkpoints are minimums.

Checkpoint A - Review of steps 1-2.

Checkpoint B - Review of step 3.

Checkpoint C - Review of steps 4-7.

Checkpoint D - Review of steps 8-9.

VII. Guidelines for Cost Estimating

Rates for costing will change over time and the division will update these guidelines as needed.

A. Manpower

These rates include salaries, benefits, insurance and other overhead.

- 1) \$17 per man/hour or
- 2) \$600 per man/week or
- 3) \$2,500 per man/month or
- 4) \$30,000 per man/year.

B. Computer

These rates include computer and peripheral rental, space and facilities, and operational manpower costs. The rates are derived from the averages of actual costs vs. past OJCS utilization statistics.

IBM 360/65	\$700 per CPU hour.
IBM 360/195	\$3,000 per CPU hour.
IBM 360/67	\$2,000 per CPU hour.
Simulation of RCA 501 (on IBM 360/195)	\$200 per elapsed hour.

C. Special Support equipment, supplies or contracts.

All are actual cost.

VIII. Establishing Skill Pools

All personnel in the Division will be entered into a skill pool matrix. These skill pools will be a cross reference list of training and experience which each person has in both computer and non-computer specialties. His proficiency in each of these skills will be recorded and maintained. The intent is to provide sufficient knowledge to identify and select personnel with the best skill profile to work on various projects assigned to the Division.

The Branch Chiefs are responsible for determining the skills of their assigned personnel and maintaining a skill profile and proficiency form on each person. They will work with the D/Chief for Project Management to project skill requirements and provide training, hiring, etc. necessary to meet those requirements.

The C/GSB is responsible for coordinating requirements for a management system to provide timely access to such skill information for the Division staff.

IX. Production Staff

Maintenance and production of applications (completed projects) is the responsibility of the Production Staff. The Production Staff handles customer requests against applications of an estimated cost of LT \$2,000. The Assistant for Production has responsibility for judging the validity of the request and accepting or rejecting it. He measures the value of the expected end product against the use of limited OJCS resources, i.e., manpower and computer power. Requests for large efforts (GT \$2,000) are forwarded to the PMG for action. In such cases, the Assistant for Production writes his cursory evaluation of the request with recommendations for the PMG.

Software systems are developed by 1) OJCS for other Agency components, 2) Other Agency components for themselves, and 3) Contractors for other Agency components. (Contractors working for OJCS are considered as OJCS developers). All programs developed as per (1) have an end date as projects and are transferred to the Production Staff for Production and Maintenance. Programs developed as per (2) and (3) are accepted by the Production Staff, only if the developing projects were registered with the PMG and were reviewed by the PMG through its checkpoint and control procedure.

The Production Staff is responsible for maintaining production run schedules, receiving ad hoc requests against applications, evaluating such requests as to worth, and insuring that all production run requirements are completed satisfactorily. It coordinates with the Branch Chiefs for manpower to be assigned to production and maintenance responsibilities for specific projects. It is responsible for maintenance of the documentation and production statistics and problems of all applications. Primary and secondary manpower will be assigned to each application.

X. Division Efficiency Reports

The C/CSB in coordination with the other branch chiefs, the PMG, and the C/Admin/OJCS is responsible for developing a personnel technical performance measurement form. Such document will be prepared by the PMG for each project leader after completion of the project, and by the Assistant for Production for each primary on each application on its anniversary date. The Project Leader will prepare such document on each team member upon project completion or member reassignment. Completed technical performance documents are sent to the appropriate branch chief.

Efficiency reports of personnel assigned to branches will be written by the branch chiefs. The substance of the technical performance documents will be integrated into the official fitness report. Either the technical performance report representing the employee's major effort, all technical reports, or a composite of the technical report will be attached to the official fitness reports.

At project checkpoint reviews with the PMG, the PMG is expected to constructively critique the project leader's performance. The technical performance appraisal at project completion should be consistent with critiques given at the checkpoint reviews.

The C/PMG will rate the members of the PMG. Particular performance emphasis will be given to management performance, i.e., how the PMG member is cognizant of an Agency global view of benefits versus resource utilization to overall Agency objectives.

The DC/P&S will rate the Assistant for Production and the Assistant for Support. Each Assistant will rate his staff.

The C/AD will rate the deputies and branch chiefs.

In cases in which personnel (secretaries as an example) are assigned full time to specific support tasks, ratings will be by the person to whom assigned.

XI. Information Flow and Reporting

The general policy is to run an "open" Division. Factual information on any and all projects, production and maintenance will be fully exchanged within the Division subject only to the security "need-to-know" restrictions.

There will be no formal command chain and the Division Chief and other staff personnel will have an "open door" policy for informal discussions with personnel at all levels in the organization.

Personnel are encouraged to recognize their own strong and weak points. They should request assistance, training, and job assignments which are in balance with their own skills and which will meet their long term goals. Personnel who desire job assignments both within or outside of the Division are encouraged to apply. No stigma will be attached to these efforts whether they are successful or not. The Division policy will be to help its personnel in meeting their goals in acquiring new skills and the better use of these skills.

A benefit of the matrix organization is that talented persons, regardless of seniority, tend to percolate to the top and to become recognized by management early in their careers. At the senior levels, persons have broad exposure to Agency goals, requirements, and problems, and thus become more competitive in selections for office and Agency management positions. Career planning by the division and by the OJCS career planning officer will be supportive of a general policy of training Agency managers, while providing technical career avenues for those who wish to remain technical.

As part of the "open" policy, technical assistance and advice should be freely requested and given at all levels.

XII. Promotions

Formal promotion recommendations for the division staff and for personnel in the branches are made by the respective chiefs.

The PMG and the Project Leaders may initiate promotion recommendations to Branch Chiefs, who will coordinate all inputs to the formal recommendation.

XIII. This Document

C/SSB will chair a committee of branch chiefs, DD/P&S, and a member of the PMG to review this document in November 1973. A revised and updated document is requested for division distribution by 20 December 1973.